

Curing for Quality

A portion of the annual sweetpotato crop is still marketed as “green,” although the practice is fading from favor. Green roots are washed, graded, and packed within a few hours or days of harvest and shipped immediately to buyers without curing. Uncured sweetpotatoes generally lack the visual appeal, shelf life, and culinary character of cured roots.

Most sweetpotato growers and packers have invested in modern curing facilities and consider proper curing an indispensable first step in a process that allows the industry to provide a year-round supply of high-quality sweetpotatoes. Successful curing requires roots to be held at a temperature of 85°F (29°C) and a relative humidity of 85 to 90 percent with proper ventilation for three to five days immediately after harvest. (The duration varies depending on the root pulp temperature at harvest. The greater the difference between root pulp temperature and 85°F (29°C), the longer it will take to cure. See page 47 for more information.) A delay of as few as 12 hours between harvest and curing has been shown to be detrimental to successful curing.

Sweetpotatoes remain metabolically active after harvest. They respire, converting starch to sugars that are metabolized to release carbon dioxide and water vapor. Sufficient movement of air (ventilation) during curing is essential and helps dry roots and any adhering soil, provides proper oxygen and carbon dioxide exchange, and is necessary for good heat transfer during curing. As little as one-half cubic foot of outside air per bushel per day is sufficient for proper ventilation. However, sweetpotatoes injured by rough handling, exposed to chilling, or harvested from waterlogged soil may require as much as 5 to 10 cubic feet of outside air per bushel per day.

The humidity during curing should be as high as possible (85 to 90 percent) but not to the point where water may be seen on the walls, floors, bins, or especially the sweetpotatoes. All properly designed curing facilities should have correctly sized humidification equipment and controls. The cost of this equipment is easily recovered in reduced weight loss and better root quality. Curing rooms should be properly insulated to conserve energy and reduce condensation. (See Appendix 3 for a discussion of insulation materials.)

BENEFITS OF CURING:

1. Curing enhances culinary characteristics (eating quality). A sweetpotato's culinary characteristics are a combination of color, texture, taste, aroma, and fiber content. Much of the culinary character of an individual

sweetpotato depends on the cultivar and, to a smaller extent, on cultural practices during the growing season. Some of the most important culinary characteristics, however, are the result of chemical changes that occur as a result of curing. Proper curing has been shown to increase the sensation of moistness and sweetness, enhance the aroma, and decrease starch content while increasing sugars.

2. Curing aids in wound healing and reduces losses due to shrinkage and disease. When roots are wounded, the exposed cells will quickly dry and die. Sweetpotatoes will naturally exude sticky latex from injuries, particularly at the ends of the sweetpotato (Figure 14). This material may dry in a few hours and appear to close the wound, but it actually provides little protection from decay organisms or weight



Figure 14. Latex stains on roots. (PHOTO BY B. EDMUNDS)

loss. Only proper curing can result in “true” wound healing. Under curing conditions, the sweetpotato will deposit a layer of material under the dead cells in the wounded area. This barrier further reduces moisture loss and impedes microbial invasion of the tissue. In the final stage of this process, a second layer similar to undamaged skin is deposited under the wound in a process known as *suberization*.

3. Curing sets the skin. Freshly harvested sweetpotatoes have thin, delicate skin that is easily broken, scraped, or otherwise removed (Figure 5). Some cultivars may be washed and graded without serious injury if it is carefully done within 24 to 48 hours of harvest. However, most cultivars require curing to “set the skin” because the skin quickly becomes too loose to permit safe handling. Proper curing after harvest results in skin that sets within four to six weeks. The exact time required for skin set varies considerably across cultivars. The factors influencing skin set, such as growing conditions, are not well understood and are the subject of ongoing research.